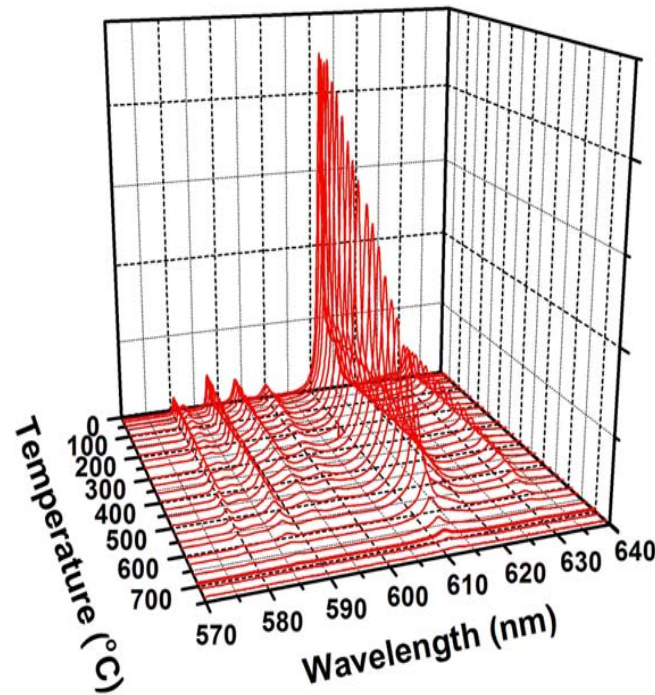


Thin Film Temperature Sensors

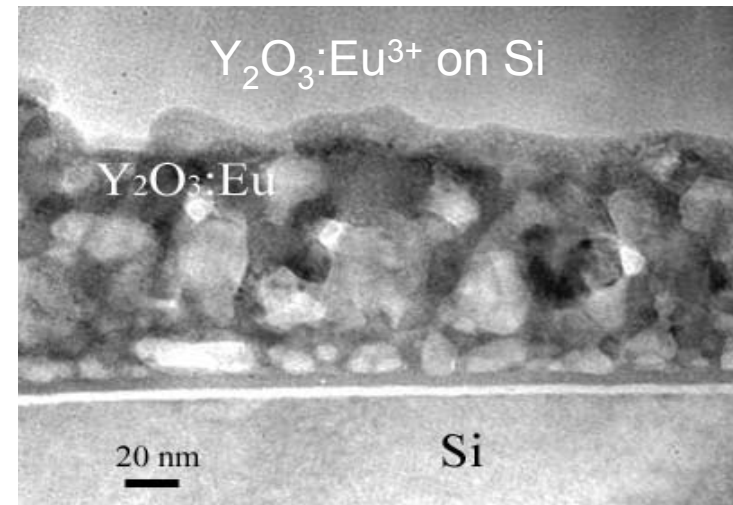
Joanna McKittrick, University of California San Diego DMR9972509



Luminescence spectra of $(Y_{1-x}Eu_x)_2O_3$
as a function of temperature

Measurement of fluorescent intensity, decay time and breadth of peaks as a function of temperature can accurately determine surface temperatures.

Thin films of fluorescent materials can be used to remotely probe surface temperatures. Fluorescent properties are very sensitive to temperature due to electron-phonon interactions. Investigated the microstructure of thin films on emission properties and determined large crystallite sizes in thin films produce intensities comparable to powders.

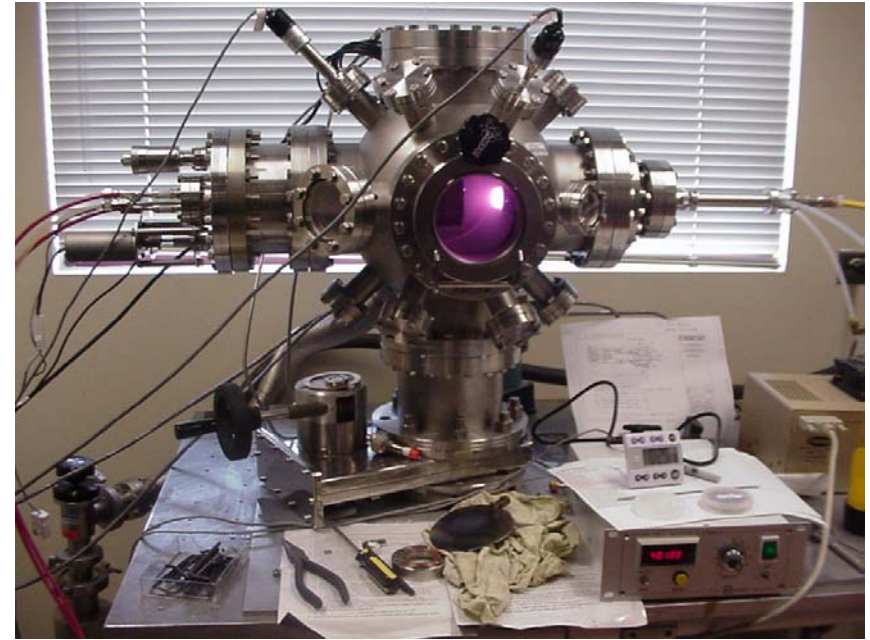


Transmission electron micrograph of $(Y_{1-x}Eu_x)_2O_3$ grown on Silicon

Thin Film Temperature Sensors

Joanna McKittrick, University of California San Diego DMR9972509

One graduate student and two undergraduate students (one woman) have contributed to this work. We also have a strong cross-boarder collaboration with the Center for Condensed Matter Science (Centro de Ciencias de la Materia Condensada) in Baja California, Mexico in which students from both countries have used each other equipment to further their research.



We have also used our lab as an early outreach tool to encourage junior high and high school students to take up the sciences when they reach college age. Lab demonstrations of luminescence and the thin film deposition have been given.